Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method of wireless communications using a transceiver having a receiver and transmitter, comprising:

programming at least one of the receiver and the transmitter to process communication protocol for a local area network or a personal area network;

receiving a first signal at the receiver from a wireless source; and

transmitting a second signal from the transmitter into space,

wherein the programming comprises programming a demodulator with a demodulation, wherein the receiver comprises a low intermediate frequency (IF) heterodyne architecture, wherein the transmitter, the receiver and a local oscillator (LO) are integrated on a single integrated circuit chip, wherein the LO comprises a voltage controlled oscillator (VCO), a frequency divider and a mixer, wherein an output of the VCO is operatively coupled to an input of the frequency divider and to an input of the mixer, wherein an output of frequency divider is operatively coupled to the input of the mixer, and wherein the output of the mixer is operatively coupled to a downconverter of the receiver that downconverts the received first signal and to an upconverter of the transmitter, wherein the second signal has been upconverted by the upconverter of the transmitter.

2. (Currently Amended) The method of claim 1 wherein ~~the transmission of~~ the second signal ~~comprises filtering the second signal with~~ has been filtered by a filter, and wherein the programming comprises programming a frequency band of the filter.

3. (Currently Amended) The method of claim 1 wherein ~~the transmission of~~ the second signal ~~comprises amplifying the second signal with~~ has been amplified by an amplifier, and

wherein the programming comprises programming a gain of the amplifier.

4. (Currently Amended) The method of claim 1 wherein ~~the transmission of~~ the second signal ~~comprises filtering the second signal with~~ has been filtered by a filter and ~~amplifying~~ amplified by ~~the filtered second signal with~~ an amplifier, and wherein the programming comprises programming a frequency band of the filter and programming a gain of the amplifier.

5. (Currently Amended) The method of claim 4 ~~further~~ comprising, after programming the frequency band of the filter and programming the gain of the amplifier, reprogramming at least one of the frequency band of the filter and the gain of the amplifier ~~after amplifying the filtered second signal~~.

6. (Currently Amended) The method of claim 1 wherein ~~the reception of the first signal comprises filtering~~ the received first signal is filtered by ~~with~~ a filter, and wherein the programming comprises programming a frequency band of the filter.

7. (Currently Amended) The method of claim 1 wherein ~~the reception of the first signal comprises amplifying~~ the received first signal is amplified by ~~with~~ an amplifier, and wherein the programming comprises programming a gain of the amplifier.

8. (Currently Amended) The method of claim 1 wherein ~~the reception of the first signal comprises demodulating~~ the received first signal is amplified by a multiple stage amplifier and is demodulated by the ~~with a~~ demodulator, and wherein at least one stage of the multiple stage amplifier is programmable.

9. (Currently Amended) The method of claim 1 wherein ~~the reception of the first signal~~

~~comprises amplifying~~ the received first signal ~~with~~ is amplified by an amplifier, wherein the amplified first signal is filtered by ~~filtering the amplified first signal with~~ a filter, ~~and~~ wherein the filtered first signal is demodulated by the ~~demodulating the filtered first signal with a~~ demodulator, and wherein the programming comprises programming a gain of the amplifier and a frequency band of the filter.

10. (Original) The method of claim 9 further comprising reprogramming at least one of the gain of the amplifier, the frequency band of the filter and the demodulation for the demodulator after the filtered first signal is demodulated.

11. (Currently Amended) The method of claim 9 wherein ~~the transmission of the second signal comprises filtering the second signal with a second filter and amplifying the filtered second signal with a second amplifier~~ the second signal has been filtered by a second filter and amplified by a second amplifier, and wherein the programming ~~further~~ comprises programming a frequency band of the second filter and programming a gain of the second amplifier.

12. (Currently Amended) The method of claim 11 further comprising reprogramming at least one of the gain of the amplifier, the frequency band of the filter, and the demodulation for the demodulator after the demodulating the filtered first signal, and reprogramming at least one of the frequency band of the second filter, and the gain of the second amplifier after the second signal has been filtered and amplified ~~amplifying the filtered second signal~~.

13. (Currently Amended) The method of claim 1 ~~further~~ comprising ~~downconverting~~ amplifying the received first signal using a low noise amplifier that has a single-ended input and a differential output.

14. (Currently Amended) The method of claim ~~13~~ 1 wherein the downconversion comprises mixing the received first signal with a clock.

15. (Currently Amended) The method of claim 14 ~~further~~ comprising generating the clock by mixing a second clock with a third clock.

16. (Currently Amended) The method of claim 15 ~~further~~ comprising generating the third clock by dividing a frequency of the second clock by an integer N.

17. (Original) The method of claim 16 wherein the clock comprises a frequency f_{LO} equal to f_{VCO} (N+1) / N, wherein f_{VCO} equals a frequency of the second clock.

18. (Original) The method of claim 17 wherein N = 2.

19. (Currently Amended) The method of claim 1 ~~further comprising upconverting the second signal before transmission into space~~ wherein the second signal has been filtered by a programmable low pass filter before being transmitted.

20. (Currently Amended) The method of claim ~~19~~ 1 wherein the upconversion comprises mixing the second signal with a clock.

21. (Currently Amended) The method of claim 20 ~~further~~ comprising generating the clock by mixing a second clock with a third clock.

22. (Currently Amended) The method of claim 21 ~~further~~ comprising generating the third clock by dividing a frequency of the second clock by an integer N.

23. (Original) The method of claim 22 wherein the clock comprises a frequency f_{LO} equal to f_{VCO} (N+1) / N, wherein f_{VCO} equals a frequency of the second clock.

24. (Original) The method of claim 23 wherein N = 2.

25. (Withdrawn) The method of claim 1 wherein the transmitter and receiver each have a component, the method further comprising calibrating one of the transmitter and receiver components.

26. (Withdrawn) The method of claim 25 wherein one of the components comprises a resistor.

27. (Withdrawn) The method of claim 25 wherein one of the components comprises a capacitor.

28. (Withdrawn) The method of claim 25 wherein the calibration comprises calibrating the receiver component before the first signal is received, the method further comprising recalibrating the receiver component after the first signal is received.

29. (Withdrawn) The method of claim 25 wherein the calibration comprises calibrating the transmitter component before the second signal is transmitted, the method further comprising recalibrating the transmitter component after the second signal is transmitted.

30. (Withdrawn) The method of claim 25 further comprising coupling test data to said one of the transmitter and receiver with the calibrated component, and monitoring an output

thereof.

31. (Withdrawn) The method of claim 30 further comprising recalibrating said one of the transmitter and receiver with the calibrated component, coupling the test data thereto, and monitoring the output thereof.

32. (Currently Amended) A method of wireless communications using a transceiver having a receiver, a transmitter and a local oscillator (LO), comprising:

programming at least one of the receiver and the transmitter to process a communication protocol for a local area network or a personal area network;

programming a frequency of a clock in the LO ~~local oscillator~~;

receiving a first signal at the receiver from a wireless source;

downconverting the received first signal with the LO using the clock;

upconverting a second signal with the LO using the clock; and

transmitting the upconverted second signal from the transmitter into space,

wherein the programming of one of the receiver and the transmitter comprises programming a demodulator with a demodulation, wherein the receiver comprises a low intermediate frequency (IF) heterodyne architecture, wherein the transmitter, the receiver and the LO are integrated on a single integrated circuit chip, wherein the LO comprises a voltage controlled oscillator (VCO), a frequency divider and a mixer, wherein an output of the VCO is operatively coupled to an input of the frequency divider and to an input of the mixer, wherein an output of frequency divider is operatively coupled to the input of the mixer, and wherein the output of the mixer is operatively coupled to a downconverter of the receiver that downconverts the received first signal and to an upconverter of the transmitter that upconverts the second signal.

33. (Original) The method of claim 32 further comprising amplifying the received first signal with an amplifier, and programming gain of the amplifier.

34. (Original) The method of claim 32 wherein the received first signal is downconverted to an intermediate frequency signal.

35. (Original) The method of claim 34 further comprising filtering the intermediate frequency signal with a filter, and programming a frequency band of the filter.

36. (Original) The method of claim 34 further comprising downconverting the intermediate frequency signal to a baseband signal.

37. (Previously Presented) The method of claim 36 further comprising demodulating the baseband signal with a demodulator.

38. (Original) The method of claim 32 wherein the programming of the clock frequency comprising mixing a second clock with a third clock.

39. (Currently Amended) The method of claim 38 further comprising generating the third clock by dividing a frequency of the second clock by an integer N.

40. (Original) The method of claim 39 wherein the clock frequency f_{LO} is equal to f_{VCO} (N+l) / N, wherein f_{VCO} equals a frequency of the second clock.

41. (Original) The method of claim 40 wherein N = 2.

42. (Original) The method of claim 32 further comprising amplifying the upconverted first signal with an amplifier before transmitting the upconverted first signal into space, and programming gain of the amplifier.

43. (Original) The method of claim 32 further comprising filtering the first signal with a filter, and programming a frequency band of the filter.

44. (Withdrawn) The method of claim 32 wherein the transmitter and receiver each have a component, the method further comprising calibrating one of the transmitter and receiver components.

45. (Withdrawn) The method of claim 44 wherein one of the components comprises a resistor.

46. (Withdrawn) The method of claim 44 wherein one of the components comprises a capacitor.

47. (Withdrawn) The method of claim 44 wherein the calibration comprises calibrating the receiver component before the first signal is received, the method further comprising recalibrating the receiver component after the first signal is received.

48. (Withdrawn) The method of claim 44 wherein the calibration comprises calibrating the transmitter component before the second signal is transmitted, the method further comprising recalibrating the transmitter component after the second signal is transmitted.

49. (Withdrawn) The method of claim 44 further comprising coupling test data to said

one of the transmitter and receiver with the calibrated component, and monitoring an output thereof.

50. (Withdrawn) The method of claim 49 further comprising recalibrating said one of the transmitter and receiver with the calibrated component, recoupling the test data thereto, and remonitoring the output thereof.

51. (Currently Amended) An adaptive transceiver, comprising:

a receiver having programmable component;

a transmitter operatively coupled to the receiver and having a programmable component; and

a controller to program at least one of the receiver and transmitter components to process communication protocol for a local area network or a personal area network,

wherein the controller programs a demodulator with a demodulation, wherein the receiver comprises a low intermediate frequency (IF) heterodyne architecture, wherein the transmitter, the receiver and a local oscillator (LO) are integrated on a single integrated circuit chip, wherein the LO comprises a voltage controlled oscillator (VCO), a frequency divider and a mixer, wherein an output of the VCO is operatively coupled to an input of the frequency divider and to an input of the mixer, wherein an output of frequency divider is operatively coupled to the input of the mixer, and wherein the output of the mixer is operatively coupled to a downconverter of the receiver that downconverts the received first signal and to an upconverter of the transmitter that upconverts the second signal.

52. (Original) The adaptive transceiver of claim 51 wherein the receiver component comprises a filter having a programmable frequency band.

53. (Original) The adaptive transceiver of claim 51 wherein the receiver component comprises an amplifier having a programmable gain.

54. (Previously Presented) The adaptive transceiver of claim 51 wherein the receiver component comprises the demodulator with programmable demodulation.

55. (Previously Presented) The adaptive transceiver of claim 51 wherein the receiver component comprises an amplifier having a programmable gain, and the receiver further comprises a filter coupled to the amplifier and having a programmable frequency band, and the demodulator coupled to the filter and having programmable demodulation.

56. (Original) The adaptive transceiver of claim 51 wherein the transmitter component comprises a filter having a programmable frequency band.

57. (Original) The adaptive transceiver of claim 51 wherein the transmitter component comprises an amplifier having a programmable gain.

58. (Original) The adaptive transceiver of claim 51 wherein the transmitter component comprises a filter having a programmable frequency band, and an amplifier coupled to the filter and having a programmable gain.

59. (Previously Presented) The adaptive transceiver of claim 58 wherein the receiver component comprises a second amplifier having a programmable gain, and the receiver further comprises a second filter coupled to the second amplifier and having a programmable frequency band, and the demodulator coupled to the second filter and having programmable demodulation.

60. (Currently Amended) The adaptive transceiver of claim 51 ~~further comprising an local oscillator coupled to the receiver and transmitter~~ wherein the receiver comprises a multiple stage amplifier in which each stage of the amplifier is programmable.

61. (Currently Amended) The adaptive transceiver of claim ~~60~~ 51 wherein the ~~local oscillator~~ LO comprises a clock generator which outputs a clock to the receiver and the transmitter.

62. (Currently Amended) The adaptive transceiver of claim 61 wherein the ~~transmitter~~ upconverter comprises a second mixer ~~to mix~~ that mixes the clock with a baseband signal.

63. (Currently Amended) The adaptive transceiver of claim 62 wherein the transmitter ~~further~~ comprises an amplifier coupled to the second mixer, the amplifier being the programmable transmitter component.

64. (Currently Amended) The adaptive transceiver of claim 62 wherein the transmitter ~~further~~ comprises a filter coupled to the second mixer, the filter being the programmable transmitter component.

65. (Currently Amended) The adaptive transceiver of claim 61 wherein the transmitter component comprises a filter with a programmable frequency band to filter a baseband signal, ~~and~~ wherein the ~~transmitter~~ upconverter ~~further~~ comprises a second mixer coupled to the filter ~~to mix~~ that mixes the clock with the filtered baseband signal, and wherein the transmitter comprises an amplifier coupled to the second mixer and having a programmable gain.

66. (Currently Amended) The adaptive transceiver of claim 61 wherein the ~~receiver~~

downconverter comprises a second mixer ~~to mix~~ that mixes the clock with a received signal from a wireless source.

67. (Currently Amended) The adaptive transceiver of claim 66 wherein the receiver ~~further~~ comprises an amplifier coupled to the second mixer, the amplifier being the programmable receiver component.

68. (Currently Amended) The adaptive transceiver of claim 66 wherein the receiver ~~further~~ comprises a filter coupled to the second mixer, the filter being the programmable receiver component.

69. (Currently Amended) The adaptive transceiver of claim 66 wherein the receiver ~~further~~ comprises the demodulator coupled to the second mixer, the demodulator being the programmable receiver component.

70. (Currently Amended) The adaptive transceiver of claim 61 wherein the receiver component comprises an amplifier having a programmable gain ~~to amplify~~ that amplifies a received signal from an external wireless source, ~~and~~ wherein the ~~receiver further~~ downconverter comprises a ~~first~~ second mixer coupled to the amplifier ~~to mix~~ that mixes the amplified received signal with the clock, wherein the receiver comprises a filter coupled to the ~~first~~ second mixer and having a programmable frequency band, wherein the receiver comprises a ~~second~~ third mixer coupled to the filter, and wherein the receiver comprises the demodulator coupled to the filter and having programmable demodulation.

71. (Currently Amended) The adaptive transceiver of claim 70 wherein the transmitter component comprises a second filter with a programmable frequency band ~~to filter~~ that filters a

baseband signal, ~~and~~ wherein the ~~transmitter~~ ~~further~~ upconverter comprises a ~~third~~ fourth mixer coupled to the second filter ~~to mix~~ that mixes the clock with the filtered baseband signal, and wherein the transmitter comprises a second amplifier coupled to the ~~third~~ fourth mixer and having a programmable gain.

72. (Currently Amended) The adaptive transceiver of claim 61 wherein the ~~local oscillator~~ LO comprises a second clock generator which outputs a second clock to the receiver.

73. (Currently Amended) The adaptive transceiver of claim 72 wherein ~~the second clock generator comprises an oscillator and a divider coupled to the oscillator,~~ the frequency divider having a control input coupled to the controller to program a frequency of the second clock.

74. (Currently Amended) The adaptive transceiver of claim 61 wherein ~~the clock generator comprises a voltage controlled oscillator to generate the clock, the voltage controlled oscillator a~~ VCO has a ~~having~~ frequency different than a frequency of the clock.

75. (Currently Amended) The adaptive transceiver of claim 74 wherein the ~~clock generator further comprises a divider coupled to the voltage controlled oscillator, and a mixer coupled to both the divider and the voltage controlled oscillator, the mixer having an output comprising the clock to the transmitter and receiver~~ local oscillator comprises a crystal oscillator coupled to a second frequency divider that is coupled to a third frequency divider that is coupled to a programmable phase lock loop.

76. (Currently Amended) The adaptive transceiver of claim 75 wherein ~~the divider further comprises a control input coupled to the controller to program the frequency of the clock~~ the second frequency divider divides a frequency of a signal by L and the third frequency divider

divides a frequency of a signal by n, where L and n are integers.

77. (Currently Amended) The adaptive transceiver of claim 75 wherein the ~~clock generator further comprises a phase lock loop comprising the voltage controlled oscillator, the phase lock loop having a control input coupled to the controller to program the frequency of the voltage controlled oscillator~~ programmable phase lock loop is coupled to the VCO.

78. (Withdrawn) The adaptive transceiver of claim 51 wherein the transmitter and receiver each have a second component, and the controller is configured to calibrate one of the second components of the transmitter and receiver.

79. (Withdrawn) The adaptive transceiver of claim 78 wherein one of the second components comprises a resistor.

80. (Withdrawn) The adaptive transceiver of claim 78 wherein one of the second components comprises a capacitor.

81. (Withdrawn) The adaptive transceiver of claim 78 wherein the controller is configured to calibrate the second component of the transmitter.

82. (Withdrawn) The adaptive transceiver of claim 78 wherein the controller is configured to calibrate the second component of the receiver.

83. (Withdrawn) The adaptive transceiver of claim 78 wherein the controller is configured to calibrate the second components of both the receiver and transmitter.

84. (Withdrawn) The adaptive transceiver of claim 78 further comprising a self testing unit coupled to the receiver and transmitter, the self testing unit being configured to coupled test data to one of the receiver and transmitter, and monitor an output thereof.

85. (Currently Amended) An adaptive transceiver, comprising:

~~means for receiving~~ a receiver that receives a first signal from an external wireless source; and

~~means for transmitting~~ a transmitter that transmits a second signal into space, ~~; and~~

~~means for programming one of the receiving means and transmitting means~~ wherein at least one of the receiver and the transmitter is programmed to process a local area network communication protocol ~~for a local area network~~ or a personal area network communication protocol, wherein the ~~receiving means~~ receiver comprises ~~means for demodulating~~ a demodulator that demodulates the received first signal, ~~and~~ wherein ~~the programming means comprises means for programming the demodulating means with a~~ the demodulator is programmable with different types of demodulation, wherein the receiver comprises a low intermediate frequency (IF) heterodyne architecture, wherein the transmitter, the receiver and a local oscillator (LO) are integrated on a single integrated circuit chip, wherein the LO comprises a voltage controlled oscillator (VCO), a frequency divider and a mixer, wherein an output of the VCO is operatively coupled to an input of the frequency divider and to an input of the mixer, wherein an output of frequency divider is operatively coupled to the input of the mixer, and wherein the output of the mixer is operatively coupled to a downconverter of the receiver that downconverts the received first signal and to an upconverter of the transmitter that upconverts to form the second signal.

86. (Currently Amended) The adaptive transceiver of claim 85 wherein ~~the transmitting means~~ transmitter comprises a filter, wherein the second signal has been filtered by the filter

~~comprises means for filtering the second signal~~, and wherein ~~the programming means programs~~ a frequency band of the filter is programmed ~~filtering means~~.

87. (Currently Amended) The adaptive transceiver of claim 85 wherein the ~~transmitting means~~ transmitter comprises an adjustable gain power amplifier ~~means for amplifying the second signal, and the programming means programs gain of the amplifying means~~ and a programmable amplifier, wherein the second signal has been amplified by the adjustable gain power amplifier and the programmable amplifier.

88. (Currently Amended) The adaptive transceiver of claim 85, wherein the ~~transmitting means~~ transmitter comprises ~~means for filtering~~ a filter and an amplifier, wherein the second signal has been filtered by the filter and amplified by the amplifier ~~the second signal, and means for amplifying the filtered second signal~~, and wherein ~~the programming means programs both~~ a frequency band of the ~~filtering means~~ filter and a gain of the ~~amplifying means~~ amplifier are programmable.

89. (Currently Amended) The adaptive transceiver of claim 85 wherein the ~~receiving means~~ receiver comprises ~~means for filtering~~ a complex bandpass filter that filters the received first signal, and ~~the programming means programs~~ wherein a frequency band of the ~~filtering means~~ complex bandpass filter is programmed.

90. (Currently Amended) The adaptive transceiver of claim 85 wherein the ~~receiving means~~ receiver comprises ~~means for amplifying~~ a programmable low noise amplifier that amplifies the received first signal~~, and the programming means programs gain of the amplifying means~~.

91. (Cancelled)

92. (Currently Amended) The adaptive transceiver of claim 85, wherein the ~~receiving means~~ receiver comprises ~~means for amplifying~~ a programmable low noise amplifier that amplifies the received first signal, ~~means for filtering~~ a complex bandpass filter that filters the amplified first signal, and ~~means for demodulating~~ the demodulator that demodulates the filtered first signal, and wherein ~~the programming means programs~~ a gain of the programmable low noise amplifier ~~amplifying means,~~ and a frequency band of the ~~filtering means~~ complex bandpass filter are adaptively programmed.

93. (Currently Amended) The adaptive transceiver of claim 92 wherein the ~~transmitting means~~ transmitter comprises ~~second means for filtering~~ a programmable low pass filter, a power amplifier and a second amplifier, wherein second signal has been filtered by the programmable low pass filter and amplified by the power amplifier and the second amplifier, wherein the second amplifier is operatively disposed between the power amplifier and the programmable low pass filter, and wherein a gain of the second amplifier and a frequency band of the programmable low pass filter have been programmed ~~the second signal, and second means for amplifying the filtered second signal, and wherein the programming means programs a frequency band of the second filtering means and gain of the second amplifying means~~.

94. (Currently Amended) The adaptive transceiver of claim 85 ~~further~~ comprising ~~means for downconverting the received first signal~~ a multiple stage amplifier in which at least one stage of the amplifier can be programmed.

95. (Currently Amended) The adaptive transceiver of claim 94 wherein the ~~downconverting means~~ downconverter comprises ~~means for mixing~~ a mixer that mixes the

received first signal with a clock.

96. (Currently Amended) The adaptive transceiver of claim 95 ~~further comprising means for generating~~ wherein the clock is generated by mixing a second clock with a third clock.

97. (Currently Amended) The adaptive transceiver of claim 96 ~~further comprising means for generating~~ wherein the third clock is generated by dividing the second clock by an integer N.

98. (Original) The adaptive transceiver of claim 97 wherein the clock comprises a frequency f_{LO} equal to f_{VCO} (N+l) / N, wherein f_{VCO} equals a frequency of the second clock.

99. (Original) The adaptive transceiver of claim 98 wherein N = 2.

100. (Currently Amended) The adaptive transceiver of claim 85 ~~further comprising means for upconverting the second signal before transmission into space~~ wherein the transmitter comprises a programmable low pass filter in which a frequency band can be programmed, wherein the second signal has been filtered by the programmable low pass filter before transmission into space.

101. (Currently Amended) The adaptive transceiver of claim 100 wherein the ~~upconverting means~~ upconverter comprises ~~means for mixing~~ a mixer ~~that mixes the second signal with a clock~~ that has a first input operatively coupled to the clock and a second input that is operatively coupled to the programmable low pass filter.

102. (Currently Amended) The adaptive transceiver of claim 101 ~~further comprising~~

~~means for generating~~ wherein the clock is generated by mixing a second clock with a third clock.

103. (Currently Amended) The adaptive transceiver of claim 102 ~~further comprising means for generating~~ wherein the third clock is generated by dividing the second clock by an integer N.

104. (Original) The adaptive transceiver of claim 103 wherein the clock comprises a frequency f_{LO} equal to f_{VCO} (N+1) / N, wherein f_{VCO} equals a frequency of the second clock.

105. (Original) The adaptive transceiver of claim 104 wherein N = 2.

106. (Withdrawn) The adaptive transceiver of claim 85 wherein the transmitting means and receiver means each have a component, the adaptive transceiver further comprising means for calibrating one of the components of the transmitting and receiving means.

107. (Withdrawn) The adaptive transceiver of claim 106 wherein one of the components comprises a resistor.

108. (Withdrawn) The adaptive transceiver of claim 106 wherein one of the components comprises a capacitor.

109. (Withdrawn) The adaptive transceiver of claim 106 the calibrating means is configured to calibrate the component of the transmitting means.

110. (Withdrawn) The adaptive transceiver of claim 106 the calibrating means is configured to calibrate the component of the receiving means.

111. (Withdrawn) The adaptive transceiver of claim 106 further comprising means for testing said one of the transmitting and receiving means with the calibrated component by coupling test data thereto and monitoring an output thereof.

112. (Currently Amended) An adaptive transceiver, comprising:

means for programming the transceiver to process a communication protocol for a local area network or a personal area network;

means for receiving a first signal from a wireless source;

means for downconverting the received first signal ~~with~~ using a clock;

means for upconverting a second signal ~~with~~ using the clock;

means for transmitting the upconverted second signal into space;

means for programming a frequency of the clock; and

means for programming a demodulator with a demodulation,

wherein the receiving means comprises a low intermediate frequency (IF) heterodyne architecture, wherein the downconverting means, the upconverting means and a local oscillator (LO) are integrated on a single integrated circuit chip, wherein the LO provides the clock, wherein the LO comprises a voltage controlled oscillator (VCO), a frequency divider and a mixer, wherein an output of the VCO is operatively coupled to an input of the frequency divider and to an input of the mixer, wherein an output of frequency divider is operatively coupled to the input of the mixer, and wherein the output of the mixer is operatively coupled to downconverting means and to the upconverting means.

113. (Previously Presented) The adaptive transceiver of claim 112 further comprising means for amplifying the received first signal, and means for programming gain of the amplifying means.

114. (Previously Presented) The adaptive transceiver of claim 112 wherein the downconverting means downconverts the received first signal to an intermediate frequency signal.

115. (Previously Presented) The adaptive transceiver of claim 114 further comprising means for filtering the intermediate frequency signal, and means for programming a frequency band of the filtering means.

116. (Previously Presented) The adaptive transceiver of claim 114 further comprising means for downconverting the intermediate frequency signal to a baseband signal.

117. (Previously Presented) The adaptive transceiver of claim 116 wherein the demodulator comprises means for demodulating the baseband signal.

118. (Previously Presented) The adaptive transceiver of claim 112 wherein the clock frequency programming means comprises means for mixing a second clock with a third clock.

119. (Previously Presented) The adaptive transceiver of claim 118 wherein the clock frequency programming means further comprises means for generating the third clock by dividing the second clock by an integer N.

120. (Previously Presented) The adaptive transceiver of claim 119 wherein the clock frequency f_{LO} is equal to $f_{VCO}(N+1) / N$, wherein f_{VCO} equals a frequency of the second clock.

121. (Previously Presented) The adaptive transceiver of claim 120 wherein $N = 2$.

122. (Previously Presented) The adaptive transceiver of claim 112 further comprising means for amplifying the upconverted first signal before transmitting the upconverted first signal into space, and means for programming gain of the amplifying means.

123. (Previously Presented) The adaptive transceiver of claim 112 further eomprising means for filtering the first signal, and means for programming a frequency band of the filtering means.

124. (Withdrawn) The adaptive transceiver of claim 112 wherein the transmitting and receiving means each have a component, the adaptive transceiver further comprising means for calibrating one of the components of the transmitting and receiving means.

125. (Withdrawn) The adaptive transceiver of claim 124 wherein one of the components comprises a resistor.

126. (Withdrawn) The adaptive transceiver of claim 124 wherein one of the components comprises a capacitor.

127. (Withdrawn) The adaptive transceiver of claim 124 wherein the calibrating means is configured to calibrate the component of the transmitting means.

128. (Withdrawn) The adaptive transceiver of claim 124 wherein the calibrating means is configured to calibrate the component of the receiving means.

129. (Withdrawn) The adaptive transceiver of claim 124 further comprising means for

testing one of the receiving and transmitting means by coupling test data thereto and monitoring an output thereof.

Claims 130 - 163 (Cancelled).

164. (Currently Amended) The method of claim 1 wherein the communication protocol is associated with <u>at least</u> one of HomeRF, <u>IEEE</u> 802.11 ~~and~~ <u>and/or</u> Bluetooth.

165. (Withdrawn) The method of claim 1 wherein the programming comprises selecting a modulation scheme.

166. (Withdrawn) The method of claim 1 wherein the programming comprises selecting a data rate.

167. (Withdrawn) The method of claim 1 further comprising programming one of the receiver and the transmitter to compensate for noise or interference.

168. (Withdrawn) The method of claim 1 further comprising programming one of the receiver and the transmitter to control at least one parameter of the transceiver to compensate for a process variation or a temperature variation.

169. (Withdrawn) A method of wireless communications using a transceiver having a receiver and transmitter, comprising:

programming one of the receiver and the transmitter to compensate for noise or interference;

receiving a first signal at the receiver from a wireless source; and

transmitting a second signal from the transmitter into space.

170. (Withdrawn) The method of claim 169 further comprising programming one of the receiver and the transmitter to process communication protocol for a local area network or a personal area network.

171. (Withdrawn) The method of claim 169 further comprising programming one of the receiver and the transmitter to control at least one parameter of the transceiver to compensate for a process variation or a temperature variation.

172. (Withdrawn) A method of wireless communications using a transceiver having a receiver and transmitter, comprising:

programming one of the receiver and the transmitter to control at least one parameter of the transceiver to compensate for process variation or temperature variation;

receiving a first signal at the receiver from a wireless source; and

transmitting a second signal from the transmitter into space.

173. (Withdrawn) The method of claim 172 further comprising programming one of the receiver and the transmitter to process communication protocol for a local area network or a personal area network.

174. (Withdrawn) The method of claim 172 further comprising programming one of the receiver and the transmitter to compensate for noise or interference.